BASUTOLAND

ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR THE YEAR ENDING 30 SEPTEMBER

1947

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ANNUAL REPORT OF THE DEPARTMENT OF AGRICULTURE

For the Year ending 30th September, 1947

SECTION I

REVIEW

THE TERRITORY

1. Basutoland is bounded by the Orange Free State and Natal in the north and the Cape Province of the Union of South Africa in the south. 11,716 square miles in area, the Territory lies between 28° 35' and 30° 40' South latitude and between 27° and 29° 30' East longitude.

2. A recent geological survey has shown the complete absence of mineral wealth and so the future can hold out no prospects of any development in this direction. The wealth of the Basuto Nation must, therefore, lie in agricultural production. The chief exports, at present, are wheat and wool, which bring an annual revenue of about £450,000 to the growers. Approximately 60,000 Basuto men are normally absent, working in the mines and on farms in the Union of South Africa, this being a further source of "out-side" revenue.

3. The staple foodstuffs are maize and kaffir corn, although wheat is being increasingly used in the mountain areas, and in the southern lowlands.

4. It is estimated that of the 7,498,240 acres in the Territory, about 1,120,000 acres are under cultivation. Four-fifths of the country is steeply mountainous, the altitude varying between 5,000 feet and 11,000 feet.

5. The average rainfall is 29 inches. There is practically no timber in the country, cattle dung providing the main source of fuel.

Anti-Soil Erosion Measures

6. (a) *Terracing:* In the lowlands, comprising approximately one-fifth of the area of the Territory, the soils are largely exhausted and the water absorptive capacity is very low, and "run-off" high. On the steeper slopes, therefore, graded terrace banks are constructed by mechanical means, but on the more gentle slopes, buffer grass strips in conjunction with terrace banks are used to check erosion.
7. (b) *Grass stripping:* A large proportion of the arable land of the Territory is quite inaccessible to wheeled transport, and, therefore, to mechanical means of construction of erosion control works. As an alternative, strips six feet wide are surveyed on the contour at six feet vertical intervals, through all cultivated lands, and allowed to revert to their natural vegetative covering. Strips are also surveyed through virgin grassland which is to come under the plough. The six feet vertical interval between strips, which is insisted upon, has the effect of restricting cultivation to those mountain slopes, where the grade is not too steep for arable purposes.
8. Grass stripping in the mountains is being supplemented by manually constructed graded training banks, placed where possible at the top of cultivation on slopes to divert storm run-off from higher ground.
9. (c) *Controlled grazing:* Systems of rotational grazing have been introduced in a number of centres with the object of improving grazing, or, as is more often the case, allowing the re-establishment of proper grass cover on the mountain slopes.
10. (d) *Dam construction:* To obviate the necessity for stock walking long distances to and from water, with resultant damage to herbage, the construction of earthen dams at frequent intervals in the lowland section of the Territory is a policy which is systematically being followed, (for details of Anti-Erosion Work refer Sect. IV).

Fertility of Arable Land

11. (a) The Basuto commonly use kraal manure as a fuel supply. By every possible method including the provision by Government on loan of a number of two wheeled carts, the people are being urged to return kraal manure and village refuse to the soil. Concurrently, a tree planting campaign has been initiated, in order to provide an alternative fuel in an otherwise practically fuel-less country. A system of subsidising the application of kraal manure

and ash to arable land has been initiated, and is showing promising results, (for details refer par. 53–57).

12. (b) As a temporary wartime expedient, superphosphate has been used in the Territory. It is felt that this is incorrect as a long term policy to be adopted at present, and the use of superphosphates is not being encouraged, except in conjunction with the use of organic manure.

13. (c) Rotation of crops, and the greater use of legumes in the rotation, are being fostered.

14. (d) Experiments are in progress to demonstrate the value of grass leys for soil regeneration, including in "treatments", the use of local, free-seeding perennial species.

Crop and Stock Improvement

15. (a) *Wool:* The major export from the Territory is wool. In 1935 a system was initiated providing for the introduction of pure bred Merino rams, combined with the castration of all locally bred rams of undesirable type. Since that date there has been a regular importation annually by the Department of many hundreds of Merino rams, which are sold at under cost price to the Basuto.

16. (b) *Mohair:* As a safeguard to the Mohair industry, the importation of goats of other than the Angora breed is prohibited.

17. (c) *Cattle:* In general, cattle importations are limited to the hardy Afrikander type, but individuals who are prepared to provide supplementary feeding are permitted to import cows of exotic breed for their domestic milk supply.

18. A commencement has been made in the breeding up of a herd of native cattle, milk yield and ability to maintain condition on the natural veld being used as the first criterion for the selection of foundation stock. The object of this work is to produce animals of known ancestry for sale to the Basuto, which can withstand the rigorous conditions under which the native cattle have to exist during the winter.

19. (d) *Poultry and pigs:* Small breeding pens of purebred poultry and pigs are maintained at Maseru for the issue of improved breeding stock as required.

20. (e) *Wheat improvement:* Breeding work, combined with variety trials, has been in progress for a number of years, the ultimate object being to improve yield and baking qualities of Basutoland wheat. Wheat, as at present grown, is of an exceedingly mixed type, and

it is the aim of the Department to replace this with a strain or strains having qualities desirable from all points of view, (for details refer par. 86–90).

21. As far as possible all wheat issued for seed is treated for smut.

22. Legislation has been introduced to prevent the spread of wild oats. This weed is becoming of increasing importance as a limiting factor in wheat yields.

Education

23. The education of the people of the Territory in adopting better methods of agriculture, is the main concern of the Agricultural Demonstrators. Teaching is effected by using a system of demonstration plots worked by the owners under the supervision and advice of demonstrators, combined with simple topical lectures. As far as possible, Basuto, who have had training at one of the agricultural schools in the Union of South Africa, are recruited for this purpose.

24. The work of the Demonstrators is supplemented by practical instruction given in school gardens and by publications. A quarterly bulletin is issued, containing instruction both in English and in the Sesuto language, in the agricultural operations which should be in progress each month.

25. Instruction is given by teachers at all schools in elementary agricultural subjects.

26. Three demonstration farms, of the approximate size of the customary arable holding of the Basuto family, viz :—about six acres, have been established. All agricultural operations on these small farms are supervised by the Agricultural Officer in whose district the holding is situated.

27. There is no provision within the Territory for higher agricultural training to be given at an institution.

Nutrition

28. The first step towards rationalising the diet of the Basuto has been taken by the establishment, under the supervision of demonstrators, of individually owned vegetable gardens and the provision of seedling fruit (mainly peach) trees. The encouragement of vegetable gardening is at present considered one of the more important aspects of a demonstrator's duties.

29. In the course of time the milk yield of local cows should be improved by the cattle improvement scheme, to which reference

has already been made, which will allow of milk entering more into the normal Basuto diet, than is the case at present.

Agricultural Improvement Areas

30. Under the various headings given, the policy in regard to the main aspects of land usage and conservation has briefly been outlined. With the approval of the Paramount Chief and the Basuto concerned, certain areas have been declared Agricultural Improvement Areas, in which a combined policy in regard to all matters is to be brought into effect in an intensive manner. It is unfortunate that the question of stock limitation, a matter of fundamental importance in a scheme of reclamation such as is required in Basutoland, will not at present be considered by the Basuto.

Standards for Exportable Produce

31. Prior to 1937, the classing of wool was not carried out, with the result that the Basutoland product generally commanded a relatively poor price on the overseas market. In 1937 a Government wool classing scheme was inaugurated whereby wool was sorted, into a series of different classes under the supervision of qualified wool sorters. Steady progress has been made in this work, with greatly enhanced prices to the producer, and to-day over one-tenth of the wool exported is classed according to Government standards.

32. In 1942 it was found both necessary and desirable to improve the "get-up" of the bulk of the wool which could not be handled by Government classers, and a scheme for the simple classing of wool, by the flock owners, was instituted. This has resulted in the raising of the standard of quality of the whole of the Basutoland clip and very encouraging reports are received from buyers, as to the efficacy of the measures taken for improvement, (for details refer par. 116–121).

33. The bulk of the wheat is exported through Maseru and the Van Rooyen's Ports of Exit, where cleaning plants are established and the wheat cleaned and graded before export.

GENERAL

Staff

34. During the year Mr. Harding retired from the post of Agricultural and Livestock Officer at Teyateyaneng. His position was filled by the appointment of Mr. Bisschoff. Mr. Maughan-Brown was appointed as Assistant Conservator of Forests and is stationed

at Peka. Miss M. Cumberlidge has retired after many years of efficient and loyal service.

35. It proved impossible during the year to secure the services of a Veterinary Officer, an Agricultural Education Officer or a Storekeeper's Clerk, although provision was made in the Estimates for these posts.

36. *Administration:* The actual strength and the approved establishment of the Executive Staff consist of :—

Approved Establishment	*Actual Strength*
1 Director of Livestock and Agricultural Services	1 Director of Livestock and Agricultural Services
1 Principal Veterinary Officer	1 Principal Veterinary Officer
1 Principal Agricultural Officer	1 Principal Agricultural Officer
1 Veterinary Officer	
1 Assistant Conservator of Forests	1 Assistant Conservator of Forests
1 Agricultural-Education Officer	
1 Anti Erosion Officer	1 Anti Erosion Officer
4 Senior Agricultural & Livestock Officers	3 Senior Agricultural& Livestock Officers
8 Agricultural & Livestock Officers	8 Agricultural & Livestock Officers
7 Anti-Erosion Foremen	6 Anti-Erosion Foremen
1 Mechanic	1 Mechanic
2 Veterinary Assistants	2 Veterinary Assistants
113 Demonstrators and Assistant Demonstators	110 Demonstrators and Assistant Demonstrators
1 Storekeeper's Clerk	
4 Forest Rangers	2 Forest Rangers
4 Nurserymen	2 Nurserymen

37. It has to be noted that the post of Veterinary Officer still remains to be filled. The shortage of qualified veterinarians, who are prepared to enter Government Service remains acute in all territories in Southern Africa.

Weather Conditions

38. Although the average rainfall for the Territory was below the 31-year average, it is satisfactory to be able to record that for the first time for many years a small exportable surplus of maize was grown. Planting rains were good throughout the Territory, and growing conditions subsequently were fair, except in the South Western and eastern districts of Mohale's Hoek, Quthing, Qacha's Nek and Mokhotlong.

39. Average monthly rainfall figures recorded at the nine principal stations of the Territory are as follows :—

October	3.58	inches
November	3.10	"
December	2.74	"
January	2.65	"
February	4.59	"
March	2.79	"
April	2.73	"
May	1.09	"
June	.71	"
July	.49	"
August	.12	"
September	2.43	"
Total	27.02	inches

40. The above total of 27.02 inches is to be compared with the average rainfall for the Territory over the previous 31 years of 29.00 inches.

SECTION II

AGRICULTURE

41. *Maize and kaffir corn:* The high price of imported maize, which in some mountain areas was being retailed at 48*s*. 6*d*. per bag of 200lb., brought about an increase in the acreage sown to this crop. Planting conditions were good, although in parts of the northern lowlands replanting had to be carried out on account of the semi-baking of the surface soil after the first planting. A large increase in the area row planted behind the plough is reported from the Mokhotlong district. Further reference to this is made in par. 68. Yields from the northern districts have been excellent, but very poor crops were harvested in the southern and eastern districts.

42. Demonstration plot yields and yields from comparable "check" plots are summarized as follows :—

TABLE I

Maize and kaffir corn yields

	Maize		*Kaffir corn*	
	Demonstration Plots	Check Plots	Demonstration Plots	Check Plots
Number	245	232	50	46
Area (acres)	618	617	143	125
Average Yield per Acre (lb.)	1036	426	720	420

43. *Wheat:* Disappointing yields were obtained from the autumn sown wheat crop, harvested in December 1946. The very dry winter months gave this crop a setback from which it did not recover.

44. Excellent yields, on the other hand, were obtained from spring-sown wheat, throughout the mountain area. This crop had no set-backs, and was singularly free from rust. The quality was good.
45. Yields of mountain wheat from demonstration plots and from comparable "check" plots are given in Table II.

TABLE II

Wheat yields

	Demonstration Plots	Check Plots
Number	68	61
Area (acres)	240	195
Average yield per acre (lb.)	794	526

46. A large surplus of wheat has been available for export to the Union of South Africa. It should be noted that the shortage of maize experienced during the last few years has brought about the inclusion of wheaten products in the diet of the Basuto to a very much greater degree than heretofore. This break from the use of maize products by replacement with wheaten meal is thought likely to be permanent ; and the use of this food by the Basuto will increase as time goes on.
47. *Beans:* A small acreage of beans was planted in the lowlands and more sheltered mountain valleys. These lands were late-planted and many lands were caught by early frosts ; yields varied between one half to one bag of 200 lb. per acre.
48. *Peas:* Yields of up to 1,000 lb. per acre were harvested from the mountain pea crop sown in the spring. The acreage sown to peas in the lowlands in May and June of the report year showed increases in all districts.
49. *Oats and barley:* Fair yields of barley grain were obtained in the mountain areas. Only a very small acreage of oats was planted in the lowlands, the bulk of this being cut for forage.
50. *Total Production:*

TABLE III

The approximate agricultural production in 1947 and preceding years in bags of 203 lb. gross

Crop	1941	1942	1943	1944	1945	1946	1947
Maize	1,005,268	527,634	720,000	700,000	400,000	414,000	715,000
Sorghum	274,156	164,493	324,000	300,000	150,000	123,000	490,000
Wheat	394,688	182,187	360,000	416,000	325,000	156,500	350,000
Other Crops	73,593	36,796	40,000	56,000	40,000	32,000	36,000
Total	1,747,705	911,110	1,444,000	1,472,000	915,000	725,500	1,591,000

51. *Increased Food Production & Propaganda :* As has been stated (par. 38) the record production of food-stuffs in the central and

northern districts has allowed of a small export of maize in the report year. This was due in part to a satisfactory distribution of rainfall and partly to the improved agricultural methods which are coming into use, combined with the effect of anti-erosion work. The incentive to adopt better farming methods came largely from the shortage of food, which remained acute until January, combined with the efforts of the Departmental staff.

52. The production of the Quarterly Agricultural Bulletin was continued during the year.

53. *Manuring Campaign:* The Department has one hundred two-wheeled carts available for loan to Basuto farmers for the purpose of carting kraal manure and ash to the lands. The manuring season lasts for approximately three months, and during this time all carts are working to capacity. It was thought that some stimulus would have to be provided to cause Basuto farmers to make more use of their own transport—basket, sledges or pack ox, to supplement the working of the carts and accordingly a manuring subsidy scheme was devised. By this scheme a payment of 8*d*. per load is made where a government cart is used, and 1*s*. 4*d*. for a similar quantity of manure or ash carried onto the land by other means. The scheme has been received with a certain amount of suspicion from some quarters, but has resulted in an increase of over 4,000 loads of manure reaching the land.

54. The subsidy scheme was put into operation in July 1947 and as manuring is generally carried out from September to November the full effect of the subsidy cannot be shown in this report. 14,255 loads of manure were carried during the report year, £575 being paid in subsidy.

55. The scheme has another advantageous feature. In the past, many lands have been manured at too low a rate of application, which has given disappointing results. Where the subsidy is paid it is stipulated that one load shall be spread over not more than approximately 400 square yards, giving an application rate in the neighbourhood of four to five tons per acre.

56. While in certain areas a shortage of kraal manure and ash now exists, it is evident from the figures shown in par. 54 that so far only a relatively small area has been manured and there is room for a very large increase in the quantity of manure returned to the land before the shortage becomes general.

57. The two all steel carts which were put into use during the season have proved satisfactory, providing constant attention is paid to the lubrication of the wheel bearings. The price of these

carts (approximatly £25) puts such a cart beyond the reach of the average farmer. A cheaper make of all steel cart, manufactured in the Union of South Africa, is shortly to come onto the market and two such carts are to be brought into the Territory for trial purposes.

58. *Phosphatic fertilisers:* 445 bags of superphosphate were sold to farmers at cost price during the year. With increasing supplies of phosphatic manures becoming available it is probable that a very much larger quantity of superphosphate will be used, although it will not be the policy of the Department to encourage the large scale utilisation of this form of phosphate (vide par. 13 b), until organic manuring is more general.

59. *Seed and vegetable plant sales:* During the year the following sales of seed were made in those districts where seed was in short supply :—

Maize	1,127 bags of 203 lb.
Sorghum	15 „ „ „ „
Oats	236 „ „ „ „
Wheat	257 „ „ „ „
Beans	18 „ „ „ „
Vegetable Plants	16,000 Plants

60. *Vegetable gardens and fruit trees:* Many Basuto find difficulty in raising plants of such commonly grown vegetables as cabbages and spinach beet from seed. Trial plantings of seed were made in district nurseries in order to supply the demand for seedling vegetables and a ready sale was found for the resulting plants. Basuto who have grasped the technique of raising plants are being encouraged to sell plants to their neighbours.

61. An increase of 2,584 gardens cultivated on the advice of demonstrators has to be noted, bringing the total of such gardens to 13,026.

62. The sum of £13. 10*s*. 0*d*. was paid out in prize money for vegetable garden competitions.

63. Over 700 seedling peach trees, 300 rooted grape vine cuttings, and 50 quince trees were distributed during the year. Shortage of irrigation water resulted, in several cases, in a very poor germination of peach stones.

64. *Agricultural shows:* Six agricultural and livestock shows were held, at which £140. 0*s*. 0*d*. was collected in entrance fees from exhibitors. A subsidy of £10. 0*s*. 0*d*. was paid by the Government in respect of each show.

65. These shows are organised by local Agricultural Associations and a relatively high standard of quality amongst the exhibits of produce was general. Livestock entries were disappointing.

66. *Agricultural associations:* A total of 176 associations were active during the year, with an average membership of thirty-two people. The increase of seven associations over the number functioning during the previous year is due to the formation of a number of new "mixed" associations, combined with a small falling off in the numbers of "men's" and "women's" associations.

67. *Demonstrators:* The staff consists of forty-three demonstrators on the long grade, these being men who have had training at one or other of the Schools of Agriculture in the Union of South Africa, with sixty-six Assistant Demonstrators all of whom are on the permanent staff. Their services are supplemented by the work of temporary Assistant Demonstrators employed under the Increased Food Production drive. Their field work has again given outstanding results. A total of 363 demonstration plots was worked under the supervision of demonstrators, with an average yield of all crops of 934 lb. of grain per acre, to be compared with the average of 448 lb. from adjacent lands worked without supervision.

68. A largely increased acreage of maize was row-planted behind the plough in parts of the mountain area. This method of planting replaces the traditional method of broadcasting, and follows naturally on the construction of contour grass buffer strips. Prior to the establishment of the latter, row planting could not be advocated on the steeper slopes as a method of increasing food production, on account of the risk of increasing the "run-off" and hence loss of surface soil which the thinner stands and cleaner weeding might cause. The grass buffer strips of necessity bring about ploughing and hence planting and subsequent cultivation along the contour and thus no increase in soil loss is likely to occur.

69. Major routine work continued by Demonstrators included the laying out of grass buffer strips, village tree-planting, lectures on seasonal topics and the dosing of small stock against internal parasites. These matters are dealt with under their respective headings.

70. *Lectures and demonstrations:* Sixty-six lectures were given by Agricultural and Livestock Officers and 1,124 lectures and demonstrations by Demonstrators to a total attendance of 29,009 Basuto farmers. Manuring, Vegetable Gardening and Soil Conservation Methods were the subjects dealt with most frequently.

71. *Insect Pests:* The only severe damage to be recorded arose from cutworm and stalk borer, the former being prevalent in the early summer throughout the Territory. The practical control of the cutworm is considered to be winter ploughing, by which the over-wintering form of the grub is exposed to frosts. A considerable

and increasing acreage of mountain land is being ploughed in autumn as a control measure for wild oats, and thus a double purpose is being served by this change in the agricultural system.

72. The practical control of stalk borer is considered to be the topping of the maize plants and where this has been carried out good results have been obtained.

73. *Fungus diseases:* Damage to wheat from rust and smut was low. All wheat seed issued by the Department is treated with copper carbonate and the use of this for the control of smut is becoming known to the Basuto.

74. *Village and reserve tree planting:* Tree planting during the year was practically confined to replanting of areas which had failed from accidental fire, drought, or stock trespass. In all 1,130,000 trees were planted consisting mainly of poplar (*Populus canescens*) and silver wattle (*Acacia dealbata*). The tree planting campaign is being continued against a certain amount of passive opposition from some quarters. This position was discussed at some length at the meeting ot the Basutoland Council and as a result, it is probable that the present system of communal ownership is likely to be changed to a system of individual ownership. This should result in far greater interest being taken in the survival of the trees which have been planted.

75. The appointment of the first Assistant Conservator of Forests was made in December, 1946. A short account of his activities is contained in Sect. V of this report.

76 *Food supplies:* The Advisory Board appointed from members of the trading community have again to be thanked for placing their views concerning the distribution of food-stuffs at the disposal of the Government. During the period May 1946–November 1946, it was necessary to import maize in large quantities, from the Union of South Africa, 120,196 bags of 203 lb. gross being so imported at an approximate average price to the consumer of 37*s.* per bag. With the help of the trading community this was equitably distributed and what would undoubtedly have been a national catastrophe was averted. Thanks are due to the Minister of Agriculture of the Union Government for his co-operation in allowing this large quantity of maize to leave the Union at a time when the shortage of foodstuffs was so general.

77. From the commencement of 1947 the food shortage rapidly eased, and locally grown supplies for the next six months are likely to prove adequate for all requirements.

78. *Grazing:* For many years work has been in progress aiming at

the stablization of the soils of the arable portion of the Territory, details of this work being given in Sect. IV of this report. Equal, but more insidious soil losses have been taking place in the grasslands where the only method of approach to the erosion problem has been shown, by experimental trial (par. 98–100) to be a system of rotational grazing. This applies more particularly to the "cattle post" mountainous country, mainly above the 8,500 feet level, which comprises perhaps a quarter of the area of the Territory. Control of this country which is most difficult of access, is complicated by the system of communal grazing, which is general in Basutoland.

79. Controlled grazing in respect to perhaps a third of the "cattle post" area has been agreed to by two of the senior chiefs of the Territory into whose wards this area falls. Badly denuded mountain slopes in the area have been completely destocked, the stock being transferred to other areas, which in the past have carried little or no stock. When adequate grass cover has become re-established on the slopes which have been de-stocked, animals will be permitted to return to this grazing on a rotational system, under control.

80. *Experimental work:* Experiments in progress in the Territory may be discussed under two headings :—Crop Improvement and Grassland Management. Experiments are in progress at Maseru (elevation 5,400 feet) and at Thaba Tšoeu and Thaba Putsoa (elevation over 8,000 feet).

81. The problems under investigation at present are the multiplication of improved varieties of maize, kaffir corn and peas, manuring and crop rotational trials, grass ley trials and the introduction of new cash crops.

82. (a) *Maize:* As in previous years no significance could be attached to the results of the maize manurial trial in which application of various rates of kraal manure with or without phosphatic fertiliser are compared. It is noteworthy however, that an application of ten tons per acre of kraal manure gave a 22% increase over the next highest yield. The soil on which the experiment was carried out is completely worked out, and no response of any kind could be attributed to applications of phosphates.

83. The land available for seed multiplication is very limited ; 28 bags of 203 lb. were reaped from 5¼ acres, the varieties being Silver King, Bread Maize and American White Flint selections.

84. A grass ley experiment to compare the effect of a 2, 3 and 4 year ley of varying botanical composition with continuous maize cropping was laid down, but had to be abandoned on account of

the poor germination of grass seed. As a means of improvement in soil structure and fertility it is felt that the establishment of grass leys may provide a partial solution to the problem of the fertility of the arable lands of the lowlands.

85. (b) *Kaffir corn:* Work with this crop consisted of multiplication and observation blocks of selections from the better strains in the Territory. Further selections were made in the field during the season.

86. (c) *Wheat:* Wheat variety tests were conducted at Maseru (autumn sown) and Makhaleng (spring sown) with the following results :—

TABLE IV

Wheat variety tests

Variety	*Maseru*		*Makhaleng*	
	Days to Maturity	Yield (lb. p. acre)	Days to Maturity	Yield lb. p. acre
Scheepers	202	1561	—	—
Ceres	204	1440	120	1500
Thatcher	202	1250	120	1200
Talberg	208	1210	132	1287
Marquis	204	1182	120	1250
Redweb	204	1163		
Red Egyptian	213	1122		
Hope	204	1100	120	1000
Renown	202	1056	120	887
Reward	204	860		
R/T 7/3	194	832	120	862
R/T 19/3	194	621	120	750
Difference for significance at P = 0·05		214 lb.		246 lb.

87. 103 bags of seed wheat of the better varieties were harvested from twenty one acres for distribution and bulking in the Territory.

88. Autumn sown variety tests were planted to include seven of the selections made of the more prominent strains found in the Territory. A further twenty eight field selections were made during the year for observation on yield and rust resistance.

89. Observation plots grown at Makhaleng, showed that there is a possibility of large varietal improvements from single plant selections. In the past Basutoland had the reputation for producing a hard wheat of a quality suitable for blending with wheats lacking in baking qualities and it is desirable that this attribute be fully maintained. Yield, and rust resistance form the basis of selection at present, and baking quality is to be the subject of study when sufficient material is available for testing purposes.

90. Seven of the Reward and Talberg crosses were kept for futher observations. Two of the better crosses were included in the variety

tests, and it will have been noted that they are not satisfactory from a yield view-point.

91. (d) *Minor crops:* Small quantities of soya beans and huskless oats were multiplied for distribution as required.

92. A variety test comparing the yields of Black Eyed Susan and Basuto Yellow peas gave a definite indication of the superiority of the latter.

Grassland Problems

93. The correct management of grassland forms one of the most important subjects for investigation within the Territory. It falls naturally into two sub-divisions, which will be considered as the Lowland Problem and the Mountain Problem. The dividing line is the altitude of approximately 7,000 feet.

94. (a) *The lowland problem:* Previous experimental work shows that on account of a lack of either frost resistance or resistance to drought little use can be made of exotic species in the reclamation work which is required in the lowlands.

95. In parts of Basutoland, soils have become completely worked out, and are no longer used for arable purposes. It is thought that the seeding of such lands before they are abandoned with *Eragrostis chloromelas* or *E. curvula*, two grasses very commonly found in the lowlands, will bring a fairly rapid regeneration of these soils. These species are being used in the grass ley experiment outlined in par. 84.

96. Seed from *E. chloromelas* and *E. curvula*, is very easily obtained. If these grasses produce good results experimentally, it will be possible to apply the practice of grass leys on a wide scale.

97. (b) *The mountain problem:* The mountain areas are grazed mainly during the summer. The northern, north-western and north-eastern slopes were originally covered with sweet (*Themeda*) grass, while the colder slopes grew "sour" grasses of which *Festuca caprina* is the dominant species. Stock naturally congregate on the sweet grass, with the result that this has been slowly eaten or trodden out, and its place has been taken by useless scrub, *Chrysocoma tenuifolia* predominating. The grazing value of the mountain slopes has steadily deteriorated; in addition, *Chrysocoma* offers little resistance to soil erosion. A very large percentage of the mountain slopes has been damaged in this way, and it is considered to be the matter of most urgent and vital importance that these slopes should regain their former grass covering.

98. Experiments at Thaba Tšoeu and Thaba Putsoa and elsewhere where controlled grazing is in progress, indicate that a return to *Themeda* may be achieved by simple restriction of stocking and rotational grazing. At Thaba Putsoa, an area which twelve years ago was covered with *Chrysocoma* and at that time was fenced, the return to *Themeda* is practically complete. This area is now being used for the determination of carrying capacity of mountain slopes which have returned to their climax vegetation. Alterations in vegetation are being checked by a system of transects, where the botanical composition of the veld is determined from time to time. The results of these observations will, however, have no immediate application.

99. The Paramount Chief has set aside an area of 1,150 acres at Thaba Tšoeu on which the good effects of rotational grazing may be demonstrated. Control was commenced three and a half years ago, and consists of a simple arrangement, whereby the grazing is completely rested every third year. The grazing as with most of the "cattle post" areas, is only used during the six summer months.

100. The results of this demonstration are proving extremely satisfactory. There has been a large increase in the percentage cover, and also in the amount of *Themeda triandra*, the climax species, to be seen. The Bitter Karroo Bush, *Chrysocoma tenuifolia* is no longer the dominant species, most plants obviously being unable to withstand competition with grass, or the damage caused by a wood borer. The latter appears to thrive where there is adequate grass cover. Since this area is not fenced, control being maintained by herd-boys, the demonstration is well suited for general application.

SECTION III

LIVESTOCK AND VETERINARY

Economic Aspect

101. The season was on the whole favourable for the growth and maintenance of livestock, rainfall being about average in most areas, although the usual spring rains were later than normal. The market for livestock and animal products remained active at profitable levels in conformity with those prevailing in the Union under the present price controls. It is to be regretted, however, that despite the opportunity of off-loading redundant livestock at reasonable prices, the total export of cattle amounted to no more than 6,322

animals out of a total of 429,158 cattle (1947 Census). Sheep export at 2,561 head out of a total of 1,702,977 may be described as negligible. In such circumstances, it will be obvious that the Basuto are largely uninterested, in common with other Africans, in the disposal of their livestock, preferring indeed to store their wealth in this form despite overstocking and other concomitant evils. Wool, and to a much lesser degree hides and skins, must continue to be the main sources of cash income from animal sources.

102. Although the usual series of Government sponsored Auction Sales were held throughout the year under review, a similar lack of interest in public marketing has to be recorded. Sales, in respect of numbers of cattle sent in for disposal, were at the lowest level since the 1939-40 season i.e. from soon after the inception of Auction Sales Scheme. Indeed one series of four sales, normally held in the month of July, were cancelled entirely due to lack of support. Marketing of livestock is undoubtedly reverting largely to the previous system of disposal, that is on traders' premises by private treaty. There is, however, a great reported increase in the number of animal slaughtered and consumed in the Territory.

Statistical Review

103. The usual biennial census was taken in February 1947 and revealed, as was indeed anticipated, a substantial overall increase in all categories of livestock,—cattle in which there was a small decrease of 8,059 head, excepted. Numbers are shown separately in the Table of statistics following, but it may be indicated here that these represent increases upon the 1945 census of 26,513 horses, 158,254 sheep, 105,039 goats, 14,189 donkeys and 706 mules. It is a fair inference that the country is overstocked to a degree where cattle particularly are finding it more and more difficult to subsist and are becoming replaced by small stock, whose capacity for survival is usually greater under such conditions.

104. Taking into consideration the overstocked nature of the country as evidenced by the February census and the aggravation of the situation by the continuing preponderance of imports over exports in all categories of livestock, it was decided to restrict introductions on a quantitative as well as on the solely qualitative basis hitherto imposed. Except, therefore, in special circumstances, e.g. for immediate slaughter or in replacement of animals lost by native transport contractors etc., permits to individuals for introduction of livestock in any six months period are now limited to a maximum of two

large and ten small. Traders are limited in respect of introduction to the numbers of livestock in any category which they have already exported, and by which they are in credit. A virtual embargo has been placed on further donkey importations. Although the full effect of such a measure can be obviated by the facility with which separate individuals may obain permits, ostensibly for themselves but in fact for other persons, it represents together with the breed qualitative restrictions referred to, an additional obstacle to what would otherwise be an unending stream of animals entering the Territory.

105. Despite the restrictions referred to (although their full effect will not be obvious until a year's working can be reviewed) the preponderance of imports over exports for the year ending 30 September 1947, must be noted, viz :—

	Cattle	*Horses*	*Mules*	*Donkeys*	*Sheep*
Imports	15,154	2,063	221	429	11,210
Exports	6,322	212	–	–	2,561
	Pigs	*Goats*			
Imports	10	346			
Exports	1	151			

106. It is perhaps significant, in view of the generally overstocked nature of the country that there has been a considerable increase in comparison with the previous year, of the numbers of hides and skins exported.

	Cattle hides	*Sheep & goat skins*
1945–1946	9,074	18,422
1946–1947	31,989	32,834

The sharp rise, in hide exports, particularly may be read against the reduction in the numbers of cattle revealed by census ; it is a fair presumption that most of the animals concerned died from malnutrition, and that much of this wastage could be prevented by better management, including the sale of old or redundant animals in the summer months, instead of which they are too frequently kept to extreme old age ; these, together with immature types, frequently fail to survive the severe winter period when grazing simultaneously becoming extremely scarce.

107. Issues of vaccines, double dosing of small stock, and other statutory services show of general reduction in comparison with those of the previous year. Fortunately only two confirmed outbreaks of anthrax occurred during the year and all incontacts were inoculated. Were it not for the certainty that such diseases as anthrax or quarter evil would become heavily endemic if preventive inocu-

STATISTICS FOR 1946–47

	CATTLE	HORSES	MULES	DONKEYS	SHEEP	GOATS	PIGS	FOWLS
CENSUS	429,158	108,284	1,946	51,920	1,702,977	647,013	21,437	
Doses administered for worms	42	346			6,053,564	2,669,243		
Castration	1,779	719			13,299			
Dipping and treatment for external parasites	64	431		2	40	2		
Exports	6,322	212			2,561	151	1	
Imports	15,154	2,063	221	429	11,210	346	10	
Wool exported (lb.)					10,084,909			
Mohair exported (lb.)						1,193,931		
Bones exported (lb.)	443,500							
Hides and Skins exported	31,989				32,834			
Inoculations:								
Anthrax	17,691							
Quarter Evil	7,628							
Anaplasmosis	712							
Paratyphoid	45							
Fowl Typhoid								1,129
Chicken Pox								535
Horse-sickness		710						
Dosed for Fluke								
Blood Smears handled	78	(Anthrax 2,	Quarter	Evil 12)				
Services by Govt. Bulls and Sires	915	545		37				

lations were not utilised to control their spread from the usual sporadic case, the withdrawal of veterinary services and the uncontrolled operation of such reducing factors as worm infestation would be the most direct method of de-stocking some of the congested areas. Indeed it is difficult to justify, and hard to execute the usual measures designed to protect the livestock industry when the primary concern of the individual owner is the acquisition of still larger numbers of livestock, irrespective of quality or standards of maintenance.

Animal Health

108. As indicated in previous reports, malnutrition is the greatest single factor in this connection ; diseases such as anthrax, quarter evil and contagious abortion etc., do not occur to such degree as to constitute a menace, or even cause concern, while the country is so heavily over-stocked. It is to be noted however, that in such conditions the incidence of disease as a cause of mortality as distinguished from malnutrition and sequelae, is more difficult to determine and caution is necessary before making any absolute claims.

Disease Control

109. *Blood smear tissue examinations:* A total of 78 smears, 2 anthrax positive, 2 quarter evil positive and 74 negative or putrefactive were examined. Post-mortem examinations of all categories of carcasses including poultry are conducted on Government owned animals as far as possible and for private owners on request. Where examination is inconclusive, specimens are transmitted to Onderstepoort Laboratory, where both chemical and biological tests can be made.

110. *Anthrax:* Two sporadic outbreaks ; all in contacts inoculated.

111. *Quarter evil:* Two outbreaks (confirmed by blood smear examination). This disease is fairly widespread however, as evidenced by the quantities of vaccine sold to many individual owner who are capable of indentifying this disease.

112. *Anaplasmosis (gall-sickness):* 712 doses of this vaccine were ordered for Government and private owners during the year. It is difficult to state the incidence of this disease however, "gall-sickness" being a wide term in local phraseology covering many cases of what are undoubtedly simple digestive disorders, e.g. impaction due to the ingestion of coarse fodder ; anolagous conditions however, appear in the course of this disease, so that some confusion is inevitable, particularly in sub-acute cases.

113. *Lumpy skin disease:* This disease may be presumed to have passed unobserved through Basutoland or to have died out, no cases having been reported during the year under review.

114. *Equine mange:* This disease remains endemic and widespread. Short of a nationally organised campaign for its eradication, which its importance from an economic point of view scarcely justifies, recourse must be had to the treatment of individual animals. Although the common Lime Sulphur dipping materials are effective in use, the portability of this rather bulky material places a severe handicap on its use in the mountain areas. A solution may be found in the use of the much more highly concentrated "Gammexane" dips which can be diluted locally to a far greater degree (600–1,000 times) and experiments are now being conducted for efficacy.

115. *Other diseases: Verminosis:* (Internal parasitic diseases. The prevalence of such is to be ascribed to the generally damp and congested condition of stock areas. In the course of a year, and apart from the statutory regular dosing of sheep and goats throughout the Territory, thousands of doses of medicines in various forms are issued. Infestation ranges from bots in equines to round and tape worms in poultry. Such medicaments are sold in practically all cases at cost price.

Animal Husbandry

116. *Small stock:* The poundage of wool, classed under Government supervision was 1,280,728lb. showing an increase of 239,528 lb. on the 1945–46 season. Besides the above many traders throughout the Territory shear a considerable poundage of wool on the same standards of classing as the Government classing standards. In certain districts, viz :—Teyateyaneng, Leribe, and Mokhotlong, no Government classing was carried out.

117. Wool shorn by flock owners was simply classed, in most cases, before being offered for sale.

118. The following table gives a comparison of Government classing over the last three seasons.

TABLE V

	1944–45	1945–46	1946–47
(a) No. of Sheep shorn under official supervision	190,761.0	175,225.0	233,234.0
(b) Poundage of wool	958,108.0	1,041,200.0	1,280,728.0
(c) Average poundage per sheep	5.0	6.88	5.49
(d) Percentage of combings	28.53	27.65	40.29
(e) Percentage of shorts	23.06	29.70	9.37
(f) Percentage of XM	7.73	6.95	7.73
(g) Percentage of out-sorts	40.68	35.75	42.51

119. The total quantity of wool exported during the report year was :—

Wool: 10,084,909 lb., Mohair : 1,193,931 lb.

with the total value of £380,984 in the case of wool and £79,393 in the case of mohair.

120. Compared with the previous season the poundage of wool exported shows an increase of 7,323 lb., whereas mohair shows a decrease of 453,860 lb.

121. Prices generally, though starting on about the same basis as the previous season, increased considerably later on. Prices were as follows :—

TABLE VI

Government classed Sold at Coast		*Simply classed* Prices paid by traders	
C. 1.	13½d. – 18¾d. per lb.	Longs	10d. – 12d.
C. 2.	12½d. – 15d. „ „	Shorts	7d. – 9d.
S. S.	10¾d. – 14d. „ „	B.P.	4d. – 5d.
S.	9d. – 11⅝d. „ „	Lox.	2½d. – 3½d.
C.B.P.	8½d. – 11½d. „ „		
B.P.	7⅜d. – 11¼d. „ „		
Lox.	5d. – 7¾d. „ „		
Backs	8d. – 9½d. „ „		
N.M.	6½d. – 10½d. „ „		
L.L.	11¼d. – 14d. „ „		
L.	9d. – 11d. „ „		

Imported Governments rams' wool realised up to 22½*d.* per lb., at the coast.

122. During the current financial year, 475 Merino rams were introduced from the Union for resale to sheep farmers making a total of 7,429 improved Merino rams introduced since the inception of the Sheep Improvement Scheme in 1935. Supplies of rams available for purchase, especially in the Karoo were very limited, and it was not possible to purchase the full quota required. This shortage was due to the severe drought experienced in the Karoo sheep districts.

123. *Cattle:* The usual assistance has been provided for African owners in the form of prizes at the locally organized agricultural shows ; the castration of undesirable or redundant animals and other veterinary services, such as inoculations, mange treatment.

124. 206 bulls, mostly Afrikanders, are in use at stud centres, or on loan to custodians throughout the Territory. It must regretfully be recorded that many of such loaned animals do not receive the care and attention which they deserve, and during the year under

review, several of the older animals have perished under their inclement conditions of maintenance.

125. *Equines:* 23 stallions mostly thoroughbred are at stud or on loan throughout the Territory, apart from a small number in private ownership. Although, as stated in previous reports, the African might be better suited for most purposes with a smaller type of sire, horse-owners' partiality for the thoroughbred sire and the resulting racing potential in the progeny, makes substitution with another breed problematical, if African approval is a prerequisite to any change.

126. 17 donkey jacks, for mule breeding, are at stud or available throughout Basutoland. This number includes an additional jack which was obtained during the year and stationed at the Mafeteng stud stables. During the year 221 mules were introduced from the Union, mostly by private individuals. As their general introduction is limited by their relatively high price, and these animals are so generally useful for pack work, it has been considered unnecessary to place them under the same restrictions of introduction as are applicable to other categories of grazing animals.

127. *Pigs:* Two boars (Tamworth and Large Black) and four breeding sows (Large Black) are maintained at the pig breeding centre, Maseru.

128. The demand for weaners has remained steady, and 58 were sold during the year. The price per head, however, was increased to 20*s*. after the discovery that some had been slaughtered for food, soon after purchase, instead of being retained for breed improvement purposes.

129. *Poultry:* The breeds kept at the Government poultry breeding centres are Black Australorp, Rhode Island Red and Light Sussex. The two former breeds appear to be more suitable than the Sussex. First crosses with the native fowls do very well, and produce a bird of medium size with greatly improved egg production. During the year 190 cockerels and pullets were sold ; the demand has in fact exceeded the supplies available from present breeding pens.

130. *Marketing of animals and animal products:* It was found possible to organize only 13 auction sales during the year under review, due to the apathy of owners, and it is likely that in future winter sales will be discontinued altogether. Numbers of cattle sold and average prices realised were both lower than in the previous year, as shown in the Table following.

131. It is doubtful whether these sales can be restored to the popularity of the 1942–1943 period when the peak number of 5,370

head went through the ring. At that time prices, in response to the war-time demands, were markedly on the up grade and Africans obtained the best form of encouragement, viz :—better prices than anticipated. In May 1944, however, after a period of violent fluctuations, the Union market was brought under a controlled price system and this despite many vicissitudes, has been maintained since. Numbers of cattle sold at local auction sales have diminished steadily since about that time and although average prices realised went up, until the present year, this is referable principally to the fact that natives for the most part have concentrated on the disposal of the older and heavier class of animal. It is possible also that sellers frequently enjoyed higher prices than control parity, due to the fact that many of such animals exported by Union buyers went to uncontrolled areas therein.

132. Coincident with reduction in numbers of cattle auctioned, there has been an increase of cattle bought and exported by traders. Total exports have risen from 3,087 to 6,322 head of cattle. The ready facility with which an African can at any time dispose of his animal to the nearest store-keeper, especially if the latter has younger animals for sale or exchange, is a perpetual obstacle to controlled marketing.

133. TABLE VII

Report year	No. of Sales	No of Cattle Sold	Total Sum Realised	Average Prices
1938–39	10	257	£1,560 14 7	£6 1 5½
1939–40	11	784	5,042 17 6	6 6 7¾
1940–41	18	2,303	14,740 19 6	6 8 0¼
1941–42	18	2,539	20,701 6 6	8 3 0¼
1942–43	25	5,370	52,844 19 6	9 16 9
1943–44	22	3,423	34,150 16 6	9 19 6
1944–45	19	3,321	35,516 4 0	10 13 10¾
1945–46	19	1,862	23,461 17 6	12 12 0
1946–47	13	1,133	11,899 15 0	10 10 0
Total	155	20,992	£199,919 10 7	

134. A few animals, e.g. discarded or redundant cows from the Botšabelo Leper Settlement, aged and worn out bulls and horses belonging to Government were also sold off at the auction sales ; also animals and effects in deceased estates, etc.

135. No sheep were sold.

136. *New Legislation:* None.

ANTI-EROSION WORK

Staff

137. The anti-erosion work is under the supervision of the Anti-Erosion Officer who, in addition to his general administrative duties, supervises the constructional work in the Maseru district.

138. Constructional work in the districts is in the direct charge of either European or African foremen and supervised by District Agricultural and Livestock Officers. There are six European foremen and two Basuto foremen in charge of anti-erosion tractor gangs and one European mechanic employed in the maintenance and repairs of plant and machinery.

Plant

139. A new Caterpillar D. 4 tractor was obtained in November. There are now nine tractors operating on anti-erosion work in the Territory, but four of the machines are very old and have had to undergo overhaul.

140. An order has been placed for a British Fordson Major tractor, fitted with roadless track equipment and it is hoped it will be found suitable for the work and enable the replacement of American machines, with those of British manufacture.

Work Done

141. In the mountains, which are inaccessible to heavy machinery the work of stabilising the soil has been continued by the laying out of Buffer Grass Strips and the construction of graded training banks immediately above the arable land. These training banks are designed to hold the rush of water from above and to carry the surplus away on grade.

142. The contract system, used in the construction of training banks, and described in last year's *Annual Report* has been continued very successfully and the scope extended from the Mokhotlong mountain area to the mountain areas of Quthing, Qacha's Nek, Mafeteng and Maseru.

143. During the year the system was changed slightly as it was found that a four feet channel above the bank was not wide enough under certain conditions, while in other cases, it was unnecessarily wide. Three types of training banks are now being constructed :—

(a) A heavy bank with a minimum channel width of 6 feet for which £1. per 100 yards is paid.

(b) A bank with a 4 feet to 5 feet channel, for which 15*s.* per 100 yards is paid.

(c) A bank with a small channel of 3 feet in width for which 10*s.* per 100 yards is paid.

144. The progress made in the principal sections of the work is shown in the following schedule :—

TABLE VIII

Measure	Prior to 1947	During 1947	Total to end 1947
Area terraced lowlands (acres)	173,110.9	26,543.9	199,654.8
Length of terrace constructed lowlands (yards)	18,018,510.0	2,610,458.0	20,628,968.0
Buffer grass strips mountains (acres)	130,063.6	34,139.3	164,202.9
Training banks mountains (acres)	5,910.0	20,266.4	26,176.4
Dams constructed	195.0	43.0	238.0
No. of trees planted	825,868.0	9,936.0	835,804.0

145. The above grand totals of acreages protected by terraces, buffer strips and training banks, are made up from district totals as shown below :—

TABLE IX

District	Area terraced (acres)	Area protected by training banks in mountains (acres)	Area protected by buffer strips (acres)
Butha Buthe	2,296.4	–	2,169.9
Leribe	3,013.5	–	531.2
Teyateyaneng	5,097.5	–	1,521.3
Maseru	3,180.0	90.0	4,054.6
Mofoka's	3,661.0	–	–
Matsieng	2,905.0	–	–
Mafeteng	3,322.5	100.6	1,518.0
Mohale's Hoek	2,339.0	–	1,115.7
Quthing	–	772.0	2.814.8
Qacha's Nek	729.0	1,253.4	8,014.2
Mokhotlong	–	18,050.4	12,399.6
	26,543.9	20,266.4	34,139.3

146. *Buffer grass strips:* There is reduction in the area protected with buffer grass strips, which is due to the larger blocks of land in the more accessible areas having been completed and the work having been extended to smaller areas, which are more inaccessible. Some difficulty has also been experienced in obtaining an adequate labour supply to work during the winter months, in extreme cold.

147. In most areas, perenial grasses have become firmly established on the strips and the results in holding up soil are very pleasing.

148. The cost of setting out these 13,210,444 yards of strips was 1*s.* 6*d.* per acre which is 2*s.* per acre more than lst year. The

rise in cost is due to higher wages and to the higher cost of supervising the large areas of completed work.

149. *Terraces:* The area in the lowlands, protected by terrace banks is there cord one of 26,543 acres. This excellent result has been obtained by substituting for terrace banks one or two buffer grass strips, the number of buffer grass strips between terrace banks being dependent on the degree of the slope. The greatest problem is to prevent the silting up of terrace banks situated below steep and denuded slopes, and it has been found necessary to increase the grade very considerably, in some cases up to 1 in 5, in order to keep channels clean.

150. 1,587,883 cubic yards of earth were moved in constructing the 2,610,458 yards of terrace completed during the year.

151. The mean cost of constructing terraces was 1·3*s.* per 10 cubic yards, as compared with 1·2*s.* last year.

152. *Dams:* The dams constructed are nearly all situated in dongas or gullies and are of sufficient capacity to hold water throughout the year.

153. The total capacity of the forty-three dams constructed is 50,845,600 gallons, making the total capacity for dams constructed to date 386,280,492 gallons. The cost per 1,000 gallons of water impounded in the new dams is 0·41*s.*

154. *Tree Planting:* The season has again been most unfavourable and the small plantings carried out were confined to damp situations, such as dams and gullies.

155. *Fencing:* Fences were erected to enclose a total of 57·5 acres to protect dams and small denuded areas.

156. *Grass planting:* All dam walls, gully crossings and bottoms are planted to Kikuyu (*Pennisetum clandestinum*). This is the only grass which has survived the last three dry winters and hot summers.

157. *Grass spillways and meadow strips:* Twenty grassed-in spillways have been constructed for discharging surplus water into gullies. Numerous meadow strips have been beaconed off, the beaconing being carried out well in advance of the work, so as to allow bare spots to heal over, before water is discharged down these strips. Grazing is prohibited within the beaconed strips during the growing season from October to March.

Maintenance

158. After one year of consolidation, the anti-erosion work is handed over to the people for maintenance. For each three to five thousand acres of consolidated work a maintenance man is employed and paid for by the National Treasury. The chief work of these

maintenace men is to see that breaks are repaired and that land-owners plough correctly between the terrace banks. There has been a great improvement in correct ploughing practice, in some districts almost one hundred per cent of the people performing this work satisfactorily.

Transport

159. One new $\frac{3}{4}$ ton truck to replace a boarded vehicle at 78,000 miles and one second hand truck ex-army stocks, were purchased during the year.

Costs

160. The average cost of all anti-erosion work carried out in the lowlands was 9·3*s*. per acre, which is 2·4*s*. per acre less than last year. This figure of cost includes dams, spillways, fencing and tree planting, but excludes the purchase and depreciation of plant and equipment, the salaries and allowances of the Anti-Erosion Officer and Agricultural and Livestock Officers and overhead administrative charges. This cost of approximately 9*s*. per acre for laying out and construction, compares very favourably with the American figure of 6*s*. per acre for the rendering of technical services only, all construction work in the U.S.A. being carried out by the farmer, or charged to his account.

161. The cost of constructing training banks on contract amounted to approximately 4·4*s*. per acre for the 20,266 acres protected, while buffer grass strips cost 1·6*s*. per acre.

162. The progress made in the protection of the arable lands against erosion has been very satisfactory this year and if the present pace is maintained, the work should be completed in the Territory within eight years.

SECTION V

FORESTRY

163. The work done by the forestry section falls into two main categories, the reconnaisance and reporting which occupied most of the first half of the period, and the organization, training of staff, and opening of nurseries which characterized the second half.

164. The Assistant Conservator of Forests assumed duty on the 1st December 1946 and between this date and early May covered the mountain area of Basutoland fairly extensively on horseback

and the lowlands, rather more sketchily, by car. Observations of the existing condition of the country from the forestry view point, together with suggestions for its future management were incorporated in a report which was submitted to the Government in June.

165. One of the proposals put forward in this Report was for the establishment of four nursery centres and the building up of a sotck of hardy young trees of the species particularly suitable for each quadrant of the country. This stock will be for the formation of experimental government plantations and for sale to the Basuto. It was decided to proceed with this fundamental step while the other proposals were receiving consideration. A nursery was opened at Peka and by the end of the period two Forest Rangers and two Nurserymen were thoroughly grounded in the elements of nursery work and arrangements were in train for the opening of nurseries at other centres.

166. Experimental work has been started on a small scale and a few plots were laid out at Peka. Seed of two of the fifteen experimental species ordered from India has arrived and though one lot was delayed en route and had perished on arrival the other shows promise.

SECTION VI

CONCLUSION

Financial Statement

Revenue	*Expenditure*
£2,772. 0*s*. 0*d*.	£89,890. 15*s*. 5*d*.

168. *Visits:* A considerable number of visitors mainly interested in anti-erosion work, toured the Territory during the year, the most notable of these were Lord Hailey and Mr. Edwin W. Smith.

Acknowledgement

169. I desire to record the appreciation of my staff for the assistance and co-operation of officials and non-officials alike, in our continued efforts to improve and encourage better farming practice.

170. I personally wish to express my thanks to the staff of the Department for their unlimited energy and support.

W. G. LECKIE
Director of Livestock and Agricultural Services

Morija Printing Works, Basutoland